

PERSIMMON PSYLLA, TRIOZA DIOSPYRI (ASHMEAD)¹
(HOMOPTERA: PSYLLIDAE)

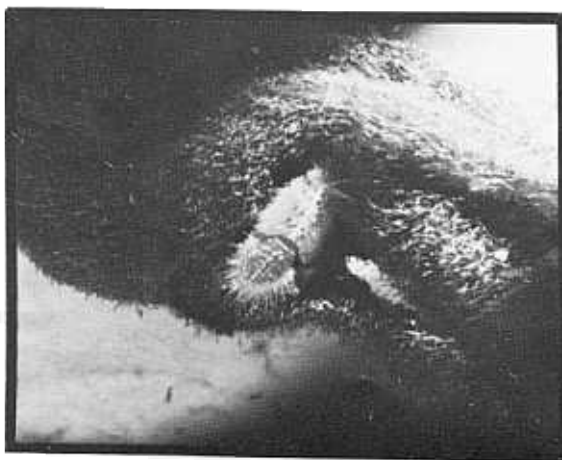
F. W. MEAD

INTRODUCTION: THE PERSIMMON PSYLLA IS A COMMON AND WIDELY DISTRIBUTED INSECT IN FLORIDA AND THE SOUTH-EASTERN UNITED STATES. IT OCCASIONALLY CAUSES MODERATE TO SEVERE DAMAGE TO THE LEAVES OF WILD AND CULTIVATED PERSIMMON TREES.

ECONOMIC IMPORTANCE AND TYPE OF DAMAGE: CULTIVATED JAPANESE PERSIMMONS ARE IMPORTANT DOORYARD FRUITS IN FLORIDA, ESPECIALLY FROM THE TAMPA AREA NORTHWARD. CAMP AND MOWRY (1948) LISTED A TOTAL OF ABOUT 22,750 BEARING AND NON-BEARING TREES IN FLORIDA. THE TOTAL NUMBER OF TREES SHOULD BE GREATER NOW. A JEFFERSON COUNTY NURSERY SOLD 50,000 NURSERY TREES OF PERSIMMON IN A RECENT YEAR. THE PERSIMMON PSYLLA CAUSES LEAVES AND SHOOTS TO BECOME STUNTED, TWISTED, AND CURLED (FIG. 1 AND 2). NYMPHS ARE FOUND IN THE POCKETINGS, TOGETHER WITH WHITE WAXY FILAMENTS, CAST SKINS, AND "HONEYDEW." ALTHOUGH A LIGHT INFESTATION WOULD HAVE LITTLE EFFECT ON TREE VIGOR, HOMEOWNERS WOULD BECOME CONCERNED, ESPECIALLY IF THE INFESTATION BECAME MODERATE TO SEVERE. PERHAPS THE MOST DOLLAR LOSS OCCURS TO NURSERYMEN WHO EITHER APPLY PREVENTIVE SPRAYS OR FIND TREE VALUES LOWERED WHEN LEAVES OF THESE TREES BECOME INFESTED AND DISTORTED.

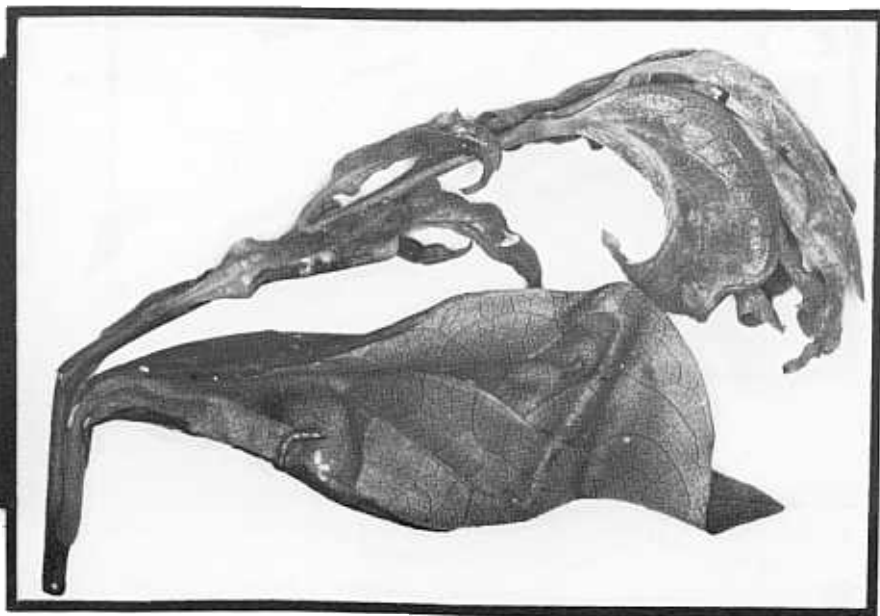
HOSTS AND DISTRIBUTION: THE DIVISION OF PLANT INDUSTRY HAS OVER 60 RECORDS OF THE PERSIMMON PSYLLA ATTACKING NATIVE PERSIMMON, DIOSPYROS VIRGINIANA L., AND THE JAPANESE OR ORIENTAL PERSIMMON, DIOSPYROS KAKI L. THE WILD PERSIMMON, D. VIRGINIANA, AND ITS VARIETIES ARE FOUND FROM SOUTHERN FLORIDA TO CONNECTICUT, WEST TO IOWA, AND SOUTHWEST TO TEXAS. THE PSYLLID APPARENTLY RANGES THROUGHOUT THE RANGE OF ITS NATIVE HOST. AT LEAST TWO AUTHORITIES ON TREES DO NOT LIST D. VIRGINIANA IN MEXICO; HOWEVER, D. TEXANA SCHEELÉ IS LISTED FOR TEXAS AND NORTHEASTERN MEXICO. POSSIBLY, THE PERSIMMON PSYLLA BREEDS ON TEXANA OR ON ONE OR MORE OF THE TEN OTHER SPECIES OF DIOSPYROS LISTED FOR MEXICO, IF NOT ON D. VIRGINIANA. MISS LOUISE M. RUSSELL (PERSONAL CORRESPONDENCE JUNE 1966) REPORTED SPECIMENS OF TRIOZA DIOSPYRI FROM MEXICO BUT DID NOT LIST TRUE HOST PLANTS. DR. J. S. CALDWELL (PERSONAL CORRESPONDENCE JUNE 1966) STATED THAT HE AND OTHERS ON TWO MEXICAN TRIPS, WHICH INCLUDED A THOROUGH SAMPLING OF MORELOS, DID NOT COLLECT I. DIOSPYRI, ALTHOUGH ADMITTEDLY SEVERAL STATES OF MEXICO WERE NOT VISITED. PRECISE DATA ARE NEEDED ON I. DIOSPYRI AND ITS HOST PLANTS IN THE TEXAS-MEXICO REGION, ESPECIALLY.

LIFE HISTORY: THE ORIGINAL DISCUSSION BY ASHMEAD (1881) IS THE MOST THOROUGH ACCOUNT OF THE PERSIMMON PSYLLA LIFE HISTORY. HE NOTED THAT IN THE SUMMER OF 1879 AT JACKSONVILLE, FLORIDA, LEAVES OF YOUNG PERSIMMON TREES WERE VERY MUCH DISCOLORED, CURLED, AND DISTORTED. UNDER THE CURLED AND TWISTED PARTS OF THE LEAVES, HE FOUND NUMEROUS SMALL, FLATTENED NYMPHS ARRANGED IN ROWS AND COVERED WITH A FINE MEALY OR POWDERY SUBSTANCE. WHEN DISTURBED, THE NYMPHS SECRETED LARGE, WATERY GLOBULES, THE COLOR OF MILKY WATER. FURTHER STUDIES RESULTED IN THE FOLLOWING ACCOUNT: "BY THE MIDDLE OF APRIL THIS [THE PERSIMMON PSYLLA] IS FOUND IN CONSIDERABLE NUMBERS ON THE LEAVES OF THE YOUNG TREES, WITH BEAKS INSERTED, ALMOST STANDING ON THEIR HEADS, AND SWAYING FROM SIDE TO SIDE LIKE THE MOTION OF A VESSEL IN A STORMY SEA. THIS MOTION IS EVIDENTLY INTENDED TO ASSIST EITHER IN INSERTING THE BEAK OR IN PUMPING UP THE JUICES OF THE TREE.



DISTORTED LEAF OF PERSIMMON, AND NYMPH OF PERSIMMON PSYLLA AT OPENING OF POCKET. 11X

FIG. 1



NEARLY NORMAL LEAF BELOW, HIGHLY DISTORTED LEAVES AND SHOOTS ABOVE, DUE TO HEAVY PSYLLID INFESTATION.

FIG. 2

¹ CONTRIBUTION No. 83, ENTOMOLOGY SECTION

"AT THIS TIME THEY ARE ALSO CAUGHT COPULATING, SOON AFTER WHICH THE FEMALE BEGINS DEPOSITING HER EGGS. THESE ARE VERY MINUTE, 0.01 INCH IN LENGTH, ELONGATE OVATE, PALE GREENISH IN COLOR, WITH A WAVY BEAK BENEATH AT THICK END, AND A LONG FILAMENT AT TIP OF SMALLER END, NEARLY THE LENGTH OF THE EGG, AND EXTENDING BACKWARDS OVER IT. THESE ARE LAID ALONG THE MARGIN OF THE LEAF, WITHOUT REGARD TO REGULARITY, THE FEMALE FIRST PREPARING FOR THEIR RECEPTION BY SECRETING A THREAD-LIKE, TRANSPARENT, GUMMY SUBSTANCE ALONG THE EXTREME EDGE OF THE LEAF; SHE THEN FASTENS THEM IN PLACE BY THE BEAK, WHICH ADHERES SECURELY TO THE GUMMY SUBSTANCE.

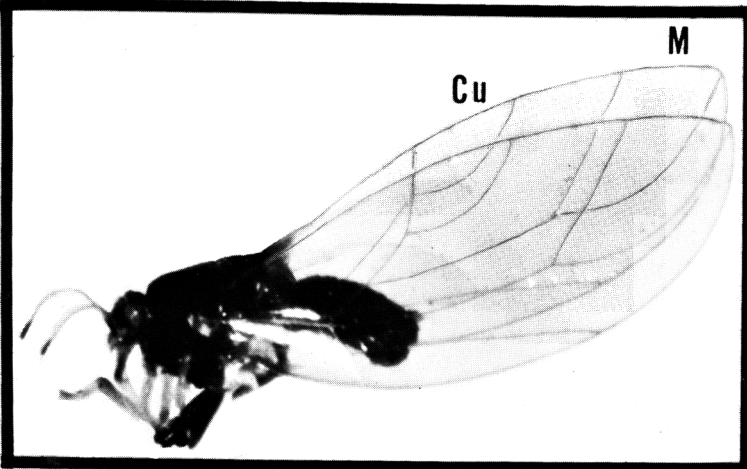
"THESE HATCH IN FROM 5 TO 6 DAYS (ACTUAL OBSERVATION) AND THE LEAF FROM THEIR PUNCTURES CURLS COMPLETELY OVER THEM; UNDER THIS THEY RESIDE UNTIL JUST BEFORE THE FINAL TRANSFORMATION. THE PUPA THEN COMES FORTH, ATTACHES ITSELF TO A LEAF OR TWIG, AND CHANGES INTO THE PERFECT FLY, ESCAPING THROUGH A LONGITUDINAL SLIT IN THE HEAD AND THORAX. THE YOUNG TAKE FROM FOUR TO FIVE WEEKS TO MATURE AND BREED THROUGHOUT THE WHOLE SUMMER.

"LIKE THE FIG PSYLLA, THE FALL BROOD PROBABLY LAY THEIR EGGS IN CREVICES OF THE BARK AND TWIGS; THESE HATCH AT THE FIRST BREATH OF SPRING, FEED ON THE TENDER NEW SHOOTS AND LEAVES, AND ARE THOSE FOUND FULLY MATURED BY THE FIRST AND SECOND WEEK IN APRIL."

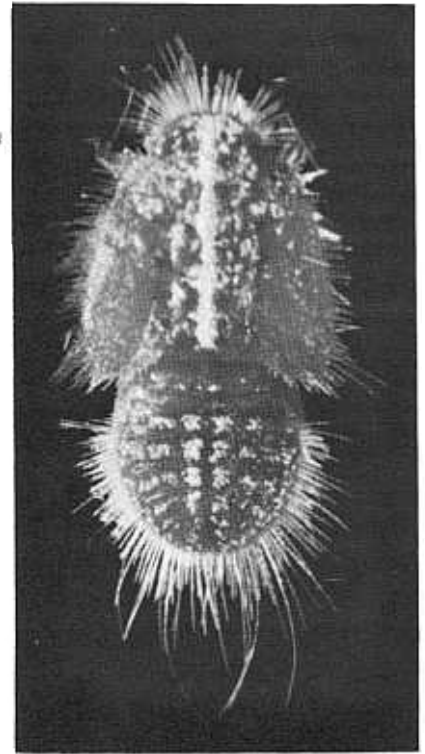
PRECISE DATA ON NUMBER OF BROODS PER YEAR ARE LACKING. IT WOULD SEEM THAT THE NUMBER OF BROODS WOULD BE PARTIALLY CORRELATED WITH THE OCCURRENCE OF NEW GROWTH FLUSHES THAT PROVIDE THE PROPER SUBSTRATE FOR THE NYMPHS IN THE FORM OF YOUNG MERISTEMATIC LEAVES AND SHOOTS. MOST OF THE PLANT INDUSTRY RECORDS LIST NYMPHS AND ADULTS IN MAY, JUNE, AND JULY. FOUR RECORDS FOR AUGUST AND TWO FOR SEPTEMBER PERTAIN TO NYMPHS. ADULTS PROBABLY HAVE EMERGED IN LATE SUMMER BUT HAVE BEEN OVERLOOKED BY COLLECTORS.

IDENTIFICATION: THE NYMPH (FIG. 4) IS FRINGED ON THE MARGINS WITH LONG HAIRS AS IN OTHER SPECIES OF TRIOZA. THE FIFTH INSTAR NYMPH WAS DESCRIBED AND FIGURED BY FERRIS (1926). IDENTIFICATION OF NYMPHS WITHOUT SUPPLEMENTARY HOST DATA IS DIFFICULT. ADULT (FIG. 3): LENGTH 3.5 TO 4.5 MM; COLOR GENERALLY SHINING BLACK EXCEPT THE MIDDLE AND HIND TIBIAE, ALL TARSI, GENAL PROCESSES, AND ANTENNAE EXCEPT TIP, WHITISH. KEY CHARACTERS: HIND TIBIAE WITH THREE INNER APICAL SPINES; ANTENNAE DISTINCTLY LONGER THAN WIDTH OF HEAD; TOP OF HEAD AND THORAX SPARSELY COVERED WITH LONG PUBESCENCE; BLACK COLOR; MEDIAL CELL OF FOREWING MUCH LARGER THAN CUBITAL.

CONTROL: WHEN THE LEAVES BECOME BADLY DISTORTED AND CURLED, IT IS TOO LATE TO APPLY CONTROL MEASURES. SPRAYS SHOULD BE DIRECTED AT ADULTS ON TREES TO REDUCE OR STOP EGG LAYING AND AGAINST EARLY INSTAR NYMPHS BEFORE THE LEAVES ARE DISTINCTLY DAMAGED. LARGER NYMPHS IN THE POCKETS OF TWISTED LEAVES ARE MUCH MORE PROTECTED AND DIFFICULT TO CONTACT WITH SPRAYS. NONE OF THE NEWER INSECTICIDES, SUCH AS MALATHION, HAS BEEN REGISTERED FOR USE ON PERSIMMON, PRIMARILY BECAUSE THIS FRUIT IS CONSIDERED A MINOR CROP. IF MALATHION IS USED, IT SHOULD BE APPLIED IN SPRING BEFORE THE NEW LEAVES ARE DAMAGED AND BEFORE FRUIT SET. AN OLDER INSECTICIDE, NICOTINE SULFATE, IS REGISTERED FOR USE ON PERSIMMON AND CAN BE USED AT ANY TIME. USE AT THE RATE RECOMMENDED ON THE LABEL FOR APHIDS.



TRIOZA DIOSPYRI, ADULT ♂, 21X
FIG. 3



TRIOZA DIOSPYRI, NYMPH, 33X
FIG. 4

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